International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

Development of Mathematics Learning Tools Using PMR Approach to Teach Trigonometry Comparison for High School Level

Rijani Ivanda Kolibu[1], Santje M. Salajang[2], Victor R. Sulangi[3]

[1, 2, 3]Master of Mathematics Education Study Program, Postgraduate Program, Manado State University
[1]*riaiura78[at]gmail.com*
[2]*santjesalajang[at]unima.ac.id*
[3]*victorsulangi[at]unima.ac.id*

Abstract: ***This publication contains the core of scientific reports on the results of development research on the application of one of the procedures for developing learning tools to teach the topic of Comparative Trigonometry and presents the results of developing devices that meet valid, practical and effective criteria. Learning tools based on Realistic Mathematics Education Approach on Trigonometry Comparison material were developed using a development model adapted from the development design model of Thiagarajan et al (1974) which consists of 4 stages, namely define, design, develop and desseminate which was adapted by eliminating the 4th stage. due to limited time and research funds. Through the 3 (three) stages of development and 2 (two) rounds of validation and field trials, learning tools were obtained to teach the topic of Trigonometry Comparison for High School Students that met the valid, practical and effective criteria.***

Keywords: Realistic Mathematics Education Approach, Learning Tools, Development Procedure, Valid Criteria, Practical Criteria, Effective Criteria.

1. Pendahuluan

In general, there are several problems faced by teachers in planning the implementation of school mathematics learning. Problems related to the teacher's ability to design learning materials for Trigonometry Comparison with prerequisite materials. The use of realistic problems by teachers in learning mathematics that can be understood or imagined by students to help understand trigonometric concepts that are still relatively lacking. In the process of learning mathematics in class, students are less encouraged to context to the real world, so that learning in class becomes a less effective and meaningful learning. Another problem is the availability of mathematics textbooks for students who predominantly present formulas without providing opportunities for students to build their understanding of trigonometry. Lack of opportunities and means for students to interact and build their own understanding during the learning process.

According to Wijayanti and Sungkono (Siregar, et al, 2020), another problem found is that the learning tools used by schools have not fully met the demands of the applicable curriculum. The learning tools used do not facilitate students to learn actively to find their own concepts. In fact, innovation in developing learning tools can lead students to find mathematical concepts independently. Mathematics learning innovation is carried out by choosing learning methods that are in accordance with the material and characteristics of students so that they can increase students' activities and motivation in learning mathematics which in turn will also improve learning outcomes. One of the mathematics learning that can have a positive impact on mathematical communication skills is Realistic Mathematics Learning. Realistic mathematics learning, which was developed in the Netherlands since the 1970s, has begun to be applied in Indonesia and adapted to the conditions in Indonesia under the name Indonesian Realistic Mathematics Learning (PMRI) since 2001 (Nurhayati, 2017). *The RME approach guides students to acquire meaningful knowledge so that the students feel familiar with mathematics and generate interest and motivation in mastering the material, Afthina et al., 2017* in (Santoso & et al, 2020). Realistic Mathematics Approach is a learning theory that starts from 'real' things for students, emphasizing the skills of 'process of doing mathematics', discussing and collaborating, arguing with classmates so they can find out on their own ('student inventing' as opposed to 'student inventing'. teacher telling') and in the end use mathematics to solve problems both individually and in groups. Zulkardi & Ilma, 2010 (Siregar, et al, 2020). There are five characteristics of a realistic mathematical approach, namely: using context, using models for progressive mathematization, utilizing student construction results, interactivity and interrelationships. The process of learning mathematics using a realistic mathematics approach is a learning process in accordance with the characteristics and principles of a realistic mathematics approach. According to Gravemeijer (Wahyudi, 2016) there are 5 (five) steps of a realistic learning approach, namely: (1) understanding problems/context, (2) explaining contextual problems, (3) solving contextual problems, (4) comparing and discussing answers, and (5) drawing conclusion. PMRI as a learning approach based on the real world has the following characteristics (Hidayati, 2013): (a) Learning starts from contextual problems taken from the real world. The problem that is used as a starting point for learning must be real for students so that they can be directly involved in situations that are in accordance with their experience; (b) The abstract and real world must be bridged by the model. The model must be in accordance with the level of abstraction that students learn. The model here can be in the form of real

situations or situations in the lives of students, such as local stories or buildings in the students' residences. The model can also be in the form of teaching aids made from materials that are in the environment around students; (c) Students can use their own strategies, language or symbols in the process of mathematizing their world. That is, students have the freedom to express the results of their work in solving real problems given by the teacher; (d) The learning process must be interactive. Good interaction between teachers and students as well as between students and students is an important element in learning Mathematics. Here, students can discuss and collaborate with other students, ask and respond to questions, and evaluate their work. Relationships between sections in Mathematics, with other disciplines and with problems from the real world are needed as an interrelated unit in problem solving. According to Gravemeijer Supinah & Agus D. W. (Hidayati, 2013), there are three main principles in PMRI, namely: guided re - invention, didactic phenomenology, and self - developed models as described below: (a) Guided re - invention, that is, providing opportunities for students to perform mathematization with realistic contextual problems for students with the help of the teacher. Students are encouraged to be active and are expected to be able to construct the knowledge they will acquire. Learning does not start from the properties or definitions or theorems followed by examples but begins with real problems which then through student activities are expected to be able to find properties, definitions, theorems, or rules by the students themselves; (b) Didactical phenomenology, meaning that Mathematics topics are presented on the basis of their application and contribution to the development of Mathematics. Mathematics learning which tends to be oriented to providing information or informing students and using mathematics that is ready to use to solve problems, is changed by making problems as the main means to start learning, thus enabling students to solve problems in their own way. In solving these problems, students are expected to be able to move towards horizontal mathematization and vertical mathematization. The achievement of horizontal mathematization is very possible through informal steps before arriving at more formal mathematics. In this case, students are expected to be able to solve problems in the direction of mathematical thinking, so that they will find their own properties or definitions or certain mathematical theorems (horizontal mathematics), then improve their mathematical aspects (vertical mathematics); (c) The model is built by the students themselves (self - delevoped models), meaning that when students work on real problems, students develop a model. This model is expected to be built by students themselves, either in the horizontal or vertical mathematization process. The freedom given to students to solve problems independently or in groups by themselves will allow the emergence of various problem solving models made by students. In realistic mathematics learning, it is expected that there will be a sequence of "real situations → models of that situation → models towards formal → formal knowledge".

Learning tools have become a mandatory grip for a teacher in carrying out a good teaching and learning process in the classroom later. In Permendikbud Number 65 of 2013 concerning Standards for Primary and Secondary Education, it is stated that the preparation of learning tools is also an important part of learning planning. So, it is very important for a teacher to prepare their learning tools as well as possible and mature as possible so that in carrying out the teaching and learning process later they feel very ready and this will be a benchmark for achieving a teacher's success. Good planning as well as proper implementation is the beginning of the success of a teaching and learning process. With the mathematics learning tools developed by the teacher, it is hoped that the learning process will be carried out well and structured. In this study, learning tools were limited, namely only related to the Learning Implementation Plan (LIP) and Student Worksheets (SW). (Daryanto & Dwicahyono, 2014) revealed that basically LIP is a form of procedure and learning management used to achieve basic competition whose contents have been determined in such a way in SI or curriculum standards. Teachers are required to cultivate a professional attitude by designing a lesson plan and other learning tools. Basically, the preparation of lesson plans has the aim of designing experiences in the teaching and learning process so that students will be easy to accept the material that will be given. In making a lesson plan, there are no specifications that are too emphasized, because the lesson plans that are made later are expected to have many innovations that are suitable for teaching materials and the learning environment of students both from natural resources.

So that we can see that effective learning can not only be found by hoping for useful and relevant experiences that will arise spontaneously in the classroom. Therefore, there is no doubt that good and effective learning can only be done with a good plan. The learning activity planning is written in a Learning Implementation Plan (LIP). According to Permendikbud Number 65 of 2013 concerning the standard of primary and secondary education, it is stated that the Learning Implementation Plan (LIP) is a learning activity plan that is carried out face - to - face, whether it is only for one meeting or more. The lesson plans developed from the syllabus are then directed towards learning activities for students in order to achieve a basic competition (KD). Every educator in the education unit is required to be able to compile a complete and systematic lesson plan so that the continuity of the teaching and learning process can take place in a fun, challenging, efficient and motivating way for students to take part in learning actively, as well as creatively and innovatively.

Based on the explanation (Kunandar, 2014) states that the steps of preparing the LIP are as follows: (a) Study of the syllabus which includes: KI and KD, learning materials, learning process, learning assessment, allocation of time and learning resources; (b) Formulation of indicators for achieving KD at KI - 1, KI - 2, KI - 3, and KI - 4; (c) Learning materials can come from textbooks and teacher manuals, current materials, other learning resources in the form of local content, learning contexts from the surrounding environment which are grouped into materials for regular, remedial and enrichment learning; (d) The description of the learning activities in the syllabus in a more operational form in the form of a scientific approach adapted to the conditions that exist in students and educational units, including the use of media, materials, tools and other

learning resources; (5) Determination of time allocation for each meeting based on the time allocation on the syllabus, then divide it into preliminary, core and closing activities; (e) Development of learning assessment by determining the scope, techniques and assessment instruments, as well as making scoring guidelines; (f) Determine remedial learning strategies immediately after the assessment, and (g) Determine media, tools, materials and learning resources and then adjust them to something that has been determined in the elaboration step of the learning process.

According to the Guide to the Development of Teaching Materials (Depdiknas, 2008), the steps for preparing SW are as follows: (a) Conduct curriculum analysis; (b) Prepare a map of SW needs; (c) Determine the titles of the worksheets.: The title of the SW is determined based on the basic competencies, subject matter or learning experiences contained in the curriculum; (d) Writing worksheets: (1) Formulating basic competencies; (2) Determine the assessment tool; (3) Prepare materials; (4) Pay attention to the structure of the SW. In general, the SW structure contains: titles, study instructions, competencies to be achieved, supporting information, tasks and work steps, and assessments.

Learning Materials

Trigonometry Comparisons in right triangles are one of the mathematical materials studied at the even semester level of class X MIA SMA. This research will only be conducted on Trigonometry Comparison of right triangles based on the basic competencies that refer to the 2013 curriculum, namely: (a) 3.7. Explain trigonometric ratios (sine, cosine, tangent, cosecant, secant, and cotangent) in right triangles; (b).4.7. Solve contextual problems related to trigonometric ratios (sine, cosine, tangent, cosecant, secant, and cotangent) in right triangles.

2. Research Procedure

The type of research used is development research with the model of Thiagarajan, Semmel and Semmel (1974). The model consists of 4 stages of development, namely the definition stage, the design stage, the development stage, and the dissemination stage. Due to the limited time and costs of researchers, the development of learning tools in this study was limited to the first 3 (three) stages. Each of these stages consists of several cyclical activities that depend on the achievement of Nieveen's (1999) decision criteria at each stage, with the direction of development shown in Figure - 1. The focus of the research is the development of mathematics learning tools consisting of Learning Implementation Plans (LIP), Student Worksheets (SW), and Learning Outcomes Tests (LOT) to teach the material of Trigonometry Comparisonsfor grade IX students of SMP with a Realistic Mathematics Education approach.

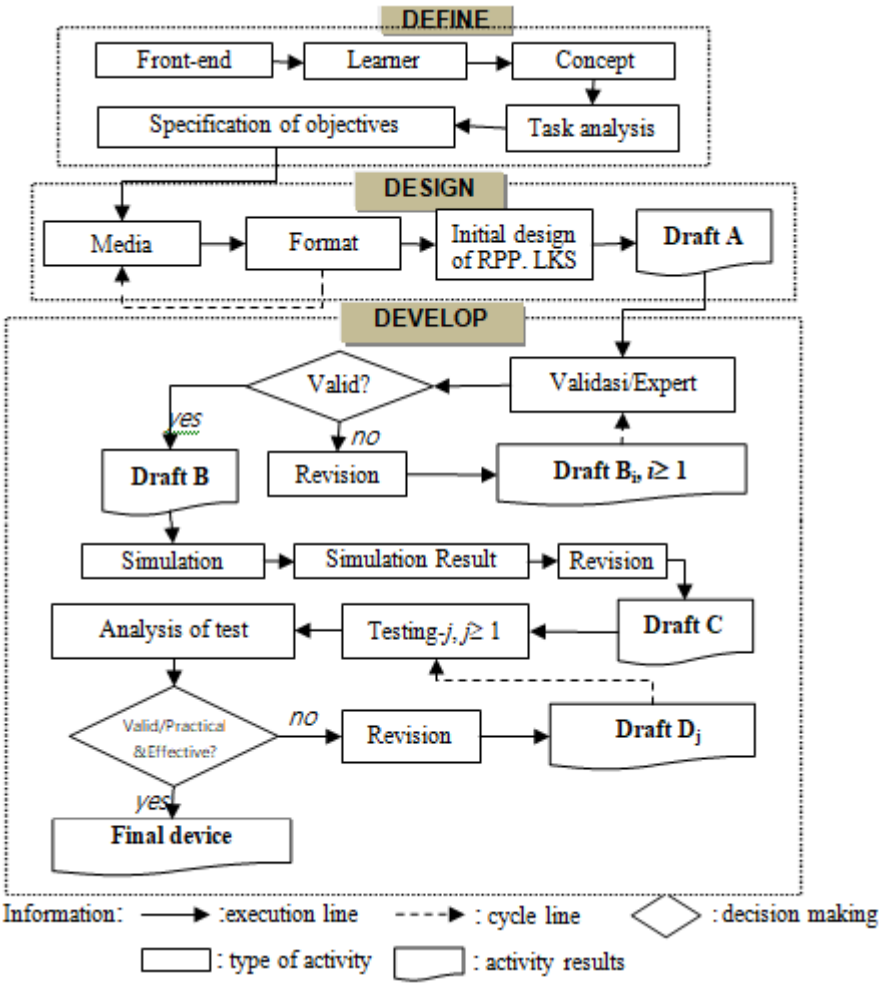

Figure 1: Description of each stage of Learning Device Development based on a modified 4 - D model

Through the first 2 (two) stages, a draft A document was obtained. The third stage was then carried out to obtain data on validity, practicality and effectiveness based on Nieveen's (1999) criteria. The validity data was obtained through the assessment of experts and practitioners of mathematics education. Practicality and effectiveness data were obtained through observation of trial activities and distributing questionnaires to class X MIP students at SMA Negeri Waren, Papua Province.

3. Results and Discussion

Through the define and design stages, learning tools are obtained, namely LIP, SW and LOT, which are then named draft A. The documents of draft A are then assessed according to Nieveen (1999) criteria which include aspects of Valid, Practical and Effective. This assessment process is cyclical, meaning that if the object of the assessment document does not meet these criteria, it will be revised according to the correction and asked to be validated again, or a trial is carried out again to assess practical and effective aspects.

In the first assessment of the validity aspect, it turned out that the results were not valid and there were notes given by the validator. After revision and reassessment, valid results were obtained, as presented in the following tables. The resulting document is hereinafter referred to as draft B (see Figure - 1)

Table 1: Validity of the Learning Implementation Plan (LIP)

Nu	Aspects of assessment	Average Value given by Validators
1.	**LIP Format:**	
	a. The format is clear so that it is easy to do the assessment	4, 3
	b. Attractiveness	4, 0
2.	**Contents of LIP**	
	a. Competency standards and basic learning competencies are clearly formulated	4, 3
	b. Learning objectives (indicators to be achieved) are clearly formulated	3, 7
	c. Describing the suitability of the learning method with the learning steps carried out	4, 0
	d. The learning steps are clearly formulated and easy to understand	3, 7
	e. Each student activity is in accordance with the learning objectives	4, 3
3.	**Language and Writing**	
	a. Using language according to standard Indonesian rules	4, 0
	b. The language used is communicative	4, 7
	c. Easy to understand language	3, 7
	d. Writing follows Enhanced Spelling rules	4, 3
4.	**Observation Sheet Function**	
	a. Can be used as a guide for teacher observations	4, 3
	b. Can be used to assess the success of the learning process	4, 3
Rata - Rata Nilai Validasi LIP untuk setiap komponen:		4, 1

Table - 1 shows that the average value of the LIP validation for each component is 4.1 and according to these criteria indicates a valid category. Even so, there are some notes of improvement given to improve the LIP. Furthermore, Table - 2 contains the average assessment of the validators on the SW which includes the aspect format, language, and content of the SW. In making revisions, the researcher refers to the results of the discussion by following the suggestions and instructions of the

Table 2: Student Worksheet Validation Results

Nu	Aspects of assessment	Average Value given by Validators
1.	**SW Format:**	
	a. The format is clear so that it is easy to do the assessment	4, 3
	b. Attractiveness	4, 3
2.	**Contents of SW**	
	a. Contents according to curriculum and LIP	4, 3
	b. Conceptual/Material Truth	4, 0
	c. Material Suitability	4, 3
	d. Developing Realistic Mathematics learning characteristics	3, 7
3.	**Language and Writing**	
	a. Questions are formulated in simple language and do not cause multiple interpretations	4, 3
	b. Use easy - to - understand terms	4, 0
	c. Formulated by following standard Indonesian rules	3, 7
Rata - Rata Nilai Validasi SWuntuk setiap komponen:		4, 1

From the table above, it can be seen that the three validators gave an average rating of 4.1, which means that the components in the SW were rated as valid, so the three validators concluded that the SW could be used with a few revisions. Thus the SW is revised only based on the validator's suggestions

Table 3: Results of Validation of Learning Outcomes Test (*LOT)*

Question Points	Content validity				Language and Writing			Conclusion			
	V	QV	NV	INV	VU	U	NU	WR	LR	AAr	CUY
1	3				3			3			
2	3				3			3			
3	2	1			2	1		3			
4	1	2			2	1		3			
5	3				2	1		3			
6	3				3			3			
7	3				3			3			

Keterangan:
V: Valid VU: Very understandable
QV: Quite valid U: understandable
NV: Not valid NU: Not understandable
INV: Invalid CU: Can't understand
WR: without revision LR: little revision
AAR: Almost all revisions
CUY: can't be used yet

The results of the expert assessments contained in the data in Table 3 show that the Learning Outcomes Test device or instrument is valid and quite valid for the content validity aspect, classified as very understandable and understandable for the language and writing aspects so that the validators conclude that all test items are acceptable. without revision. Furthermore, on the draft B document, a trial was carried out to obtain Practicality and Effectiveness data (see Figure - 1). In Trial I almost all of the indicators have not reached the set criteria, but after Trial II data on Practicality and Effectiveness have been obtained where each set indicator has been achieved, so that in Trial II, researchers have succeeded in obtaining practical and effective tools, as shown in the tables below

Table 4: Practical Observation Results (Teachers' Ability to Manage Learning with Developed Devices) in Trial II.

No	Observation Indicator	Score		Average
		LIP I	LIP II	
I.	**Preliminary activities**			
	a. Checking Student Readiness	3, 5	4, 0	3, 75
	b. Doing Apperception Activities	3, 0	4, 0	3, 5
	c. Delivering the objectives to be achieved in the learning process	4, 0	3, 5	3, 75
	d. Provide warm - up in the form of contextual problems related to the concept of learning material	3, 5	4, 0	3, 75
II.	**Main Activities**			
	a. Provide examples of contextual problems related to learning materials	4, 0	4, 0	4, 0
	b. Give student worksheets with contextual problems related to learning materials to each group	3, 5	3, 5	3, 5
	c. Provide opportunities for students who represent their respective groups to convey the results of the discussion in front of the class	3, 5	4, 0	3, 75
	d. Together with students discuss solving problems related to learning materials	4, 0	4, 0	4, 0
	e. Giving feedback	3, 5	3, 5	3, 5
III.	**Closing**			
	a. Completing students' answers that are less precise	4, 0	4, 0	4, 0
	b. Provide a general review, convey the essence of learning to students, deliver the next learning material, motivate students for the next learning process	3, 5	4, 0	3, 5
	c. Provide assessment in the form of learning outcomes test	4, 0	4, 0	4, 0
Jumlah		**44**	**46, 50**	**45**
Rata - Rata		**3, 7**	**3, 88**	**3, 75**

Based on the criteria table for the teacher's ability to manage learning, the teacher's ability to manage learning at the second meeting reached the "good" category, which is located in the interval 3.50 TKG < 4.00. So this learning device is not revised based on the results of observations of the ability to manage learning

Table 5: Data on Student Activity in Learning in Trial II

No	Observation Category	Percentage of Student Activities in Learning (%)		
		LIP I	LIP II	Rata - rata
1	Paying attention/listening to teacher/friend explanations	71, 25%	86, 56%	78.91%
2	Reading/understanding contextual problems in reading books/SW	71, 87%	82, 81%	77.34%
3	Solve problems / find ways and answers to problems	73, 75%	89, 06%	81.41%
4	Discuss / ask friends or teachers	77, 18%	87, 5%	82.34%
5	Drawing conclusions about a procedure or concept	77, 81%	85, 63%	81.72%
6	Behavior that is relevant and in accordance with learning activities	74, 06%	83, 13%	78.60%

The data in Table 5 shows that the average student activity for each aspect observed is in the good and very good categories. Furthermore, the results of the student response questionnaire, totaling 32 people, were presented after participating in learning on the Trigonometry Comparison material using a realistic mathematical approach, at the first and second meetings the following data were obtained

Table 6: Percentage of Student Responses to Learning Components

Responded aspect	Happy	Not happy
Subject matter	96, 87%	3, 13%
SW	100%	0%
Study Results Test	84, 38%	15, 62%
Classroom Learning	96, 87%	3, 13%
How to learn	93, 75%	6, 25%

Table 7: Percentage of Student Opinion on Learning Components

Responded aspect	New	Not New
Subject matter	87, 5%	12, 5%
SW	87, 5%	12, 5%
Study Results Test	81, 25%	18, 75%
Classroom Learning	90, 63%	9, 37%
How to learn	93, 75%	6, 25%

Table 8: Percentage of Student Responses to the Language Used

Responded aspect	Clear	Unclear
SW	93, 75%	6, 25%
Study Results Test	90, 63%	9, 37%

Table 9: Percentage of Student Responses to Appearance (Writing, Illustration, or Picture and Picture Location)

Responded aspect	Interesting	Not attractive
SW	90, 63%	9, 37%
Study Results Test	93, 75%	6, 25%

Based on the results of the student response questionnaire in the table above and the criteria set out in chapter III that the student's response to all aspects is above 80% which is included in the criteria set out in chapter III. This means that every aspect is responded positively by students. Thus, the learning device does not undergo revision based on student responses.

4. Conclusions and Suggestions

Based on the results of the research and the results of data analysis, the researcher can conclude that: (1) Mathematics learning tools, especially Trigonometry Comparison material can be developed with a 4 - D development model. Given the limited time and cost, the researchers only applied the first 3 (three) stages, namely the Define Stage, Design Stage and Develop Stage. (2) The quality of the learning tools developed is assessed according to the Nieveen Criteria so that all indicators of the aspects of Validity, Practicality and Effectiveness can be achieved. (3) After going through two rounds of validation and two rounds of field trials, it is obtained that mathematics learning tools, especially Trigonometry Comparison material, are valid, practical and effective. The learning tools include Learning Implementation Plans (LIP), Student Worksheets (SW) and Learning Outcomes Tests (LOT) to teach mathematics material on the topic of Trigonometry Comparison.

Based on the results of the research above, the researchers can provide the following suggestions: (1) In the application of Realistic mathematics learning, it is expected that the teacher will be able to play an active role as a facilitator in the learning process with the material learned by students, group discussions, and group work; (2) Realistic mathematics learning requires quite a lot of time so it takes class processing and the right time; (3) The resulting learning tools still need to be tested in other schools with various models in order to obtain really good learning tools (as the deployment stage in the 4 - D development model); (4) The need for further research using a realistic mathematical approach to measure other aspects, such as critical thinking skills and science process skills.

Acknowledgement
The author would like to thank the leadership of the Manado State University, in this case the Postgraduate Program Leader who has provided the opportunity to study at the Unima Mathematics Education Masters program. The researcher expresses his gratitude to the leadership of the Waren State Senior High School of Papua Province who provided the opportunity for this development research.

References

[1] Adhima, F. (2020, Oktober). *Trigonometri: Sudut Istimewa, Identitas & Perbandingan Matematika Kelas 10*. Retrieved from https: //www.ruangguru. com/blog/apa - itu - trigonometri.
[2] Daryanto, & Dwicahyono, A. (2014). *Pengembangan Perangkat Pembelejaran (silabus, LIP, PHB, bahan ajar).* Yogyakarta: Gava Media.
[3] Florianus Lahur, M. W. (2021). *Pengembangan Bahan Ajar Matematika Dengan Pendekatan Pendidikan Matematika Realistik (PMR) Setting Etnomatematika Ngada Pada Materi Peluang Untuk Siswa SMP Kelas VIII*. Jurnal Citra Pendidikan Volume 1 Nomor 4 Tahun 2021, 1, 619 - 629.
[4] Hidayati, K. (2013). *Pembelajaran Matematika Dengan Pendekatan Matematika Realistik Indonesia (PMRI) Di SD/MI*. Cendekia Vol.11 No.1 Juni 2013, 11, 164 - 181.
[5] Kosashi. (2013). *Strage Belajar dan Pembelajaran Implementasi Kurikulum 2013.* Bandung: Yrama Widya.
[6] Kunandar. (2014). *Penilaian Autentik (Penilaian Hasil Belajar Peserta Didik Berdasarkan Kurikulum 2013).* Jakarta: PT Raja Grafindo Persada.
[7] Murdani, & dkk. (2013). *Pengembangan Perangkat Pembelajaran Matematika Dengan Pendekatan Realistik Untuk Meningkatkan Penalaran Geometri Spasial Siswa Di SMP Negeri Arun Lhokseumawe.* Jurnal Peluang, Volume 1, Nomor 2, April 2013, 1, 22 - 32.
[8] Nur Oktavia Melinda, R. A. (2021). P*engembangan Perangkat Pembelajaran Matematika Dengan Pendekatan Realistic Mathematics Education (RME) Pada Materi Prisma Dan Limas Kelas VIII SMP*. Vol 4 No 1 Oktober 2021, 4, 391.

[9] Nurhayati, N. (2017, Desember). *Pengembangan Perangkat Bahan Ajar Pada Pembelajaran Matematika Realistik Indonesia untuk Meningkatkan Kemampuan Komunikasi Matematis Siswa*. Jurnal Pendidikan Matematika dan Matematika, 3, 121 - 136.

[10] Santoso, T., & dkk. (2020, July 02). *The Effect Of Realistic Mathematics Learning Approach On Concepts Of Understanding*. Jurnal Matematika Ilmiah, 07, 44 - 55.

[11] Siregar, N. D., & dkk. (2020). *Pengembangan Perangkat Pembelajaran Matematika Dengan Pendekatan Pendidikan Matematika Realistik Untuk Meningkatkan Kemampuan Penalaran Matematis dan Self - Concept Siswa*. Paradikma Jurnal Pendidikan Matematika Vol.13, No.1, Juni 2020, 13, 77 - 87.

[12] Siti Aminah Nababan, H. S. (2020). *Pengembangan Perangkat Pembelajaran Berbasis Pendekatan Matematika Realistik Untuk Meningkatkan Kemampuan Disposisi Matematis Siswa SMA Negeri 4 Wira Bangsa Kabupaten Aceh Barat. GENTA MULIA* Volume XI No.2, Juli 2020, XI, 233 - 243.

[13] *Thiagarajan, S., Semmel, D. S., & Semmel, M. I.1974.* Instructional development for training teacher of exceptional children. *Bloomington Indiana: Indiana University*.

[14] Wahyudi. (2016). *The development Of realistic Mathematics Education (RME) Model For the Improvement Of Mathematics Learning Of primary Teacher Education Program (PGSD) Students Of Teacher Training and Education Faculty (FKIP) Of Sebelas Maret University In Kebumen*. ICTTE, 2, 369 - 381.